

Claims

1. A receiving method in a receiver of a radio system, comprising:
receiving a signal with an array antenna comprising at least two antenna elements,
5 oversampling the received signal,
 measuring the spatial and temporal colour of the received oversampled signal,
 combining the received signal using combined maximum ratio combining and space-time interference rejection combining,
10 controlling the combining of the received signal on the basis of the measurement result.
2. The method of claim 1, further comprising:
calculating the energy of interference;
calculating the cross-correlation of noise between samples of the
15 received signals,
 calculating a threshold value as a quotient of the above values,
 controlling the combining on the basis of the threshold value.
3. The method of claim 2, further comprising:
calculating at least one scaling factor as a function of the threshold
20 value, and
 controlling the combining on the basis of the scaling factor.
4. The method of claim 3, further comprising:
calculating the scaling factor according to formula e^{β} , where β is the
threshold value.
- 25 5. The method of claim 3, further comprising:
 calculating the scaling factor according to formula $A\beta$, where β is the threshold value and A is a predetermined constant.
6. The method of claim 1, further comprising:
calculating a noise covariance matrix comprising noise variance
30 terms, temporal covariance terms and spatial covariance terms, and
 scaling the spatial covariance terms on the basis of the measurement result.
7. The method of claim 3 and 6, further comprising:
scaling the spatial covariance terms using the scaling factor.
- 35 8. The method of claim 3, further comprising:

comparing the calculated threshold value with a pre-determined value, and if the threshold value exceeds the given pre-determined value, the combining of the received signal is controlled on the basis of the scaling factor.

9. The method of claim 3, further comprising:

5 calculating a scaling factor for each antenna element pair separately.

10. A receiver comprising an array antenna for signal reception, the array antenna comprising at least two antenna elements, the receiver further comprising

10 means for oversampling the received signal,
 means for measuring the spatial and temporal colour of the samples
 means for combining the received signal using combined maximum
 ratio combining and space-time interference rejection combining, and
 means for controlling the combining of the received signal on the
 15 basis of the measurement result.

11. The receiver of claim 10, further comprising

 means for calculating the energy of noise;
 means for calculating the cross-correlation of noise between sam-
 ples of the received signals,
 20 means for calculating a threshold value as a quotient of the above
 values,
 means for controlling the combining on the basis of the threshold
 value.

12. The receiver of claim 11, further comprising

25 means for calculating at least one scaling factor as a function of the
 threshold value, and controlling the combining on the basis of the scaling fac-
 tor.

13. The receiver of claim 10, further comprising

 means for calculating the scaling factor according to formula e^{β} ,
 30 where β is the threshold value.

14. The receiver of claim 12, further comprising

 means for calculating a noise covariance matrix comprising noise
 variance terms, temporal covariance terms and spatial covariance terms, and
 means for scaling the spatial covariance terms using the scaling fac-
 35 tor.

15. The receiver of claim 12, further comprising

means for comparing the calculated threshold value with a pre-determined value, and making the decision of the use of the scaling factor on the basis of the comparison.

16. The receiver comprising
 - 5 an array antenna for signal reception, the array antenna comprising at least two antenna elements,
 - an analog to digital converter for oversampling the received signal,
 - a calculator for measuring the spatial and temporal colour of the samples
 - 10 a calculator for combining the received signal using combined maximum ratio combining and space-time interference rejection combining, and
 - a calculator for controlling the combining of the received signal on the basis of the measurement result.